FCHEA
Fuel Cell & Hydrogen Energy Association

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Fuel Cell and Hydrogen Energy Association Comments on the New Jersey Energy Master Plan

The Fuel Cell and Hydrogen Energy Association (FCHEA) appreciates the opportunity to submit written comments on the 2019 Draft New Jersey Energy Master Plan (EMP) as solicited by the Board of Public Utilities (BPU).

FCHEA represents the leading companies and organizations that are advancing innovative, clean, safe, and reliable energy technologies. FCHEA member organizations represent the full global supply chain for hydrogen and fuel cells, including automakers; material, component, stack and system manufacturers; hydrogen producers and energy companies; government agencies; trade associations; utilities; and end users.

FCHEA supports the goals of the EMP to electrify the transportation sector and desire to accelerate clean distributed energy resources in the state, and we believe that fuel cell and hydrogen technologies will play a critical role in both efforts.

Clean and Distributed Power Recommendations

As the BPU considers the power generation future for New Jersey, it should take a technology neutral approach to encourage the broad adoption of clean and distributed energy resources in a way that best serves the needs of the state.

Fuel cells are extremely efficient as they generate electricity through an electrochemical reaction, not combustion. Many fuel cells can be configured as a combined heat and power system able to utilize waste heat, which can raise overall energy efficiencies over 90%. Due to these high efficiencies, fuel cell technologies provide dramatic carbon emissions reductions compared to traditional power generation. In addition, stationary fuel cells produce virtually no criteria air pollutants such as NOx, SOx, or particulate matter.

Today, stationary fuel cells are powering utility substations, hospitals, data centers, office buildings, universities, logistics centers, telecommunications towers, and much more. With more than 550 megawatts of distributed generation fuel cell systems across the United States, including many deployments in New Jersey, fuel cells are a proven commercially viable technology for commercial and industrial end users.

As large-scale fuel cell systems are primarily fueled by pipelines, they are a resilient power source, ensuring that vital operations can continue when the grid is offline due to manmade or natural disasters. Superstorm Sandy demonstrated the need for and benefits of reliable technologies, and we appreciate New Jersey's interest in deploying microgrids to maintain emergency and municipal services. This need for assured power is key for critical facilities such as hospitals, city services, and data centers where every minute without power can put lives at risk or cost thousands of dollars. Fuel cells are able to provide 24/7 power behind the meter and at utility-scale that is clean, resilient, and reliable.

Stationary fuel cells are often deployed in complement with renewable energy resources such as wind and solar. Fuel cells are able to provide distributed, clean primary power for to fill needs when

renewable power is intermittent, as well as improve the reliability and stability of an electric grid with a high penetration of renewable power generation. The use of stationary fuel cells to complement and support renewable power deployment also dues do not require a need for investments into storage mechanisms or other grid infrastructure such as transmission lines.

Fuel cells systems providing baseload power are able to immediately disconnect from the grid and operate independently in the case of grid outages or disasters. When fuel cell systems are installed, critical back up power loads are identified and able to continue to be powered when the grid is unavailable. Fuel cells are able to smoothly and seamlessly disconnect and reconnect to the utility grid as needed without disruption to the end user. While fuel cells can be deployed with storage resources, this seamless operation demonstrates that storage is not a necessity for system resiliency.

As New Jersey develops its New Jersey Energy Master Plan, it should consider the Brooklyn Queens Demand Management Demand Response Program that allows ConEdison to plan for and maintain their infrastructure, while supplying reliable energy during peak periods of high demand. Fuel cell companies have installed multiple projects as part of this program. The program ultimately avoided nearly $1 billion in ratepayer costs through the use of targeted DER installations. The Program projects included one using solar, storage, and fuel cell technologies together at a low-income housing development, to optimize the efficiency, reliability, and affordability of the project. Current New Jersey regulation that prohibits multiple clean energy technologies from being used behind one customer meter should be updated to allow for these multi-technology projects that create broad benefit for local communities.

Due to their low emissions and high resiliency, reliability, and efficiency, stationary fuel cells should play a key role in New Jersey's plan to reduce emissions and support distributed generation.

Clean Transportation Recommendations

On transportation, fuel cell technologies are commercially viable today in a wide range of light, medium, and heavy-duty on-road and off-road vehicle applications, and will be instrumental to New Jersey's transportation future.

In just the few short years of being available, today there are more than 7,000 light-duty FCVs operating in California offered by Toyota, Honda, and Hyundai. In addition, across the country there are tens of thousands of fuel cell powered forklifts, dozens of fuel cell buses, and early demonstrations of zero-emission fuel cell class 8 trucks underway, all deployed alongside needed hydrogen fueling stations to keep them running. To enable deep-decarbonization and emissions reductions in the transportation sector, the EMP should embrace the advantages provided by hydrogen fuel cell powertrains in all these vehicles.

Fuel cell vehicles (FCVs) are electric vehicles. Rather than storing electricity from the grid in a battery, FCVs combine oxygen from the air with hydrogen fuel to generate electricity on board the vehicle to power an electric motor, with the only tailpipe emission being water vapor. FCVs are the only zero-emissions vehicle (ZEV) platform now, or for the foreseeable future, that replicates today's drivers experience of being able to travel 300-400 miles on a tank of hydrogen fuel and refuel in 3-5 minutes. In other words, fuel cell vehicles offer New Jersey drivers the option of Zero Emissions with Zero Compromises.

Operating an FCV is no different than gasoline vehicles consumers use today, beyond the increased performance and maintenance benefits of electric drive. When fuel is running low, you simply pull into a station with a hydrogen dispenser, swipe a credit card, insert the fuel pump, and in a few short minutes, you are back on the road. By giving the option to maintain driver's habits of returning to a central station whenever they need more fuel, FCVs can provide a zero-emission option for consumers that live in multi-family dwellings, have off-street parking, or are without access to recharge their vehicle at work or home. Therefore, fuel cells can expand access to zero-emission electric vehicles to new markets and customers.

With the goal of zero-emission electrified transportation in mind, fuel cells must play an integral role. New Jersey has signed onto the ZEV Memorandum of Understanding (MOU) along with California and seven other states agreeing to collectively commit to at least 3.3 million ZEVs on their roadways by 2025. In addition, New Jersey has adopted California's emissions standards which requires automakers to sell ZEVs. FCHEA encourages the EMP to consider California's view of fuel cells being vital to its ZEV activities. The California Air Resources Board (CARB), the agency charged with oversight of the state's ZEV program, has stated "*successful market launch and continued growth of both FCEVs and California's hydrogen fueling network are essential for the State to meet zero-emission vehicle goals set forth in Governor Brown's Executive Order B-16-2012 as well as greenhouse gas reduction, air quality improvement, and petroleum reduction goals set forth in state and federal laws and programs*."[1] To this end, the state has provided robust policy, regulatory, and financial support for the deployment of FCVs and related hydrogen refueling infrastructure. This policy and regulatory action can be taken as a model for states like New Jersey developing plans to expand ZEV adoption.

Hydrogen is an environmentally friendly fuel. Hydrogen-powered fuel cell vehicles generate zero carbon, NOx, SOx, or particulate matter emissions from the tailpipe, improving local air quality and supporting public health. No matter the source of hydrogen, FCVs dramatically reduce emissions on a well-to-wheel basis compared to combustion vehicles and are on par in reductions with battery electric vehicles (BEVs). When hydrogen is generated from renewable or zero-carbon sources – such as wind, solar, biomethane, or natural gas with carbon capture and sequestration – carbon emissions are eliminated.

Just as battery electric vehicles are getting cleaner as the utility grid adopts more renewable power generation, so too is hydrogen production. In fact, in September 2018 the Hydrogen Council, a global CEO coalition of fuel cell and hydrogen companies, announced an ambitious goal of fully decarbonizing hydrogen fuel for transport by 2030.[2] This goal would set the stage for a significant environmental impact and put hydrogen-fueled transport on a much faster path to zero-carbon intensity than the one charted by utilities for the grid. However, accomplishing this task will require the collaboration of local and state governments. By supporting FCV deployment, New Jersey can significantly reduce the transportation sector's environmental impact and reduce local air pollution.

Hydrogen systems are as safe, if not safer, than conventional fuel systems, including gasoline and natural gas. Hydrogen has been safely used by many different industrial sectors for more than fifty years. In fact, ten million metric tons of hydrogen is produced every year for use in a range of industrial applications such as chemical, refining, electronics, and pharmaceuticals. In the transportation section, hydrogen is used safely each day as fuel for cars in California, as well as trucks, buses, and forklifts

[1] https://ww3.arb.ca.gov/msprog/zevprog/ab8/ab8_report_2016.pdf
[2] http://hydrogencouncil.com/our-2030-goal/

nationwide. Furthermore, FCVs meet the strictest safety and quality standards set by both the United States National Highway and Transpiration Administration (NHTSA) and the United Nations Global Technical Regulations (GTR).

Given hydrogen's proven safety track record across the country and around the world, we strongly believe that the need to convene a task force as outlined in Goal 1.1.8 is unnecessary and would serve only to further delay the commercialization of these zero-emission vehicles in New Jersey. Both the fuel cell and hydrogen industry and federal government representatives from the U.S. Department of Energy stand ready to work with the Port Authority to overcome any concerns that may remain.

There are 40 public retail hydrogen stations servicing California's FCVs, with another 25 stations in various stages of development. This network of stations is being developed through cost-sharing between the state and private industry and will continue until such time that the infrastructure is sustainable through private investment alone.

In the Northeast, there are already twelve hydrogen stations under development, including several in the New York City metropolitan area, to enable an early market of fuel cell vehicles in the very near future. These initial stations are fully funded by private investment, which reflects the value the industry sees in introducing this technology to the area. However, the support of New Jersey and other states will be needed to fully develop a robust hydrogen infrastructure network in the Northeast.

As New Jersey looks to incorporate ZEVs as part of this Energy Master Plan, the Volkswagen Environmental Mitigation Trust (EMT), the Transportation and Climate Initiative (TCI), or any other clean transportation initiative, we ask that any program be inclusive of all ZEVs, including FCVs. We ask that you provide a level playing field and provide parity for all ZEVs in the state's tax policy and vehicle incentives, consideration for government fleets, inclusion in consumer awareness campaigns, as well as support for infrastructure development. In addition, for any program in New Jersey that may fund ZEV infrastructure, we encourage the state to set aside a portion of that funding specifically for development of hydrogen fueling infrastructure. Implementing a ZEV technology neutral approach will be simple, fair, and allow consumers more choice.

As planning for the EMP continues, state agencies and policymakers have ready access to hydrogen network planning expertise. Station developers with real world experience gained from planning and building California's hydrogen station network, as well as the early network underway in the Northeast, are available to share best practices. Developers have significant subject matter expertise regarding fuel cell application and infrastructure design, planning, and implementation. FCHEA member companies look forward to sharing their expertise with stakeholders as projects are designed, planned, and implemented. The U.S. Department of Energy-affiliated research laboratories provide sophisticated technical services, such as network planning tools that model preferred station locations, hydrogen production, and fuel cell vehicle costs.

The fuel cell and hydrogen industry is capable of great things, but we need to be able to compete on equal footing with other technologies, with an eye to always letting the consumer have options and be the ultimate decider in the marketplace. By supporting development of fuel cell and hydrogen technologies, New Jersey can mitigate the causes of climate change, while supporting the country's economic future and protecting public health.

Thank you for your consideration of our input. FCHEA looks forward to working with New Jersey to ensure that the full potential of hydrogen and fuel cell technologies are included in the final Energy Master Plan.